Points on the central line would fall in long. 10° 22′ E., lat. 64° 0′ N., and in long. 14° 31′ E., lat. 61° 41′ N. Hansteen gives for the position of Stiklastad 11° 35′ E., and 63° 48′ N., which by the above elements would be only 10′ outside the northern limit of totality. On making a direct calculation for the longitude of Stiklastad, we find that the duration of totality could not have exceeded twenty seconds on the central line.

METEORS OF DECEMBER 11.—MM. Perrotin and Jean, at the Observatory of Toulouse, observed a considerable number of meteors on the night of December 11; between 11h. and 13h. 106 were counted, the majority of which, according to M. Perrotin, radiated from a point in about R.A. 115°, N.P.D. 57°, near Castor and Pollux, though closer to the former star than to the latter. The trajectories were very short, so that it was difficult to refer them to a chart. The sky was overcast on the following night.

NOTES

WITH reference to the closing of the Loan Collection, a circular has been issued by the Lords of the Committee of Council on Education, stating that, although in consequence of the funds at their disposal for the Collection being exhausted, they have found it necessary to close the Exhibition, arrangements are being made for the safe custody of all objects which may be left on loan to the Museum, pending the decision by her Majesty's Government on the offer made by the Royal Commissioners for the Exhibition of 1851, of a building for the establishment of a permanent Science Museum. The Lords of the Committee of Council on Education also inquire whether exhibitors are willing to leave the objects contributed till this question be settled. The closing of the Exhibition will not interfere with the delivery of the Free Saturday Evening Lectures.

ACCORDING to the will of Dr. C. A. Bressa, dated September 4, 1845, the testator left all his property to the Royal Academy of Sciences of Turin, the net interest to be given every two years as a prize for the most important discovery made or work published during the previous four years on natural and experimental philosophy, natural history, mathematics, chemistry, physiology, and pathology, as well as geology, history, geography, and statistics. This is to be given alternately to a person of any nation and to an Italian. Signora C. A. Dupêché had a life interest in the property, and it was not until July last that the legacy became free from all claims, and the first prize will be given in 1879, open to all, and of the value of 480*l*. In accordance with the spirit of Dr. Bressa's will, the Academy will choose the best work or discovery, whether or not it be presented by the author.

WE are informed that the valuable collection of fossils from the Red Crag made by the Rev. H. Cahnam, of Waldringfield, including, among the most important, the remains of *Halitherium* described by Prof. W. H. Flower, teeth of *Mastodon*, &c., has been purchased by Sir Richard Wallace, and most liberally presented by him to the Ipswich Museum.

THE Dutch Society of Sciences at Haarlem has offered a gold medal for the best answer to the following question:—What are the meteorological and magnetical periodic changes which may be considered to be in a well-established relation with the period of the solar spots? The answers must have a motto and be accompanied with a sealed letter containing the name of the author. They should be sent before January 1, 1878, to the Secretary, Prof. von Baumhauer, Haarlem.

RUSSIAN newspapers announce that the Helsingfors professor, Dr. Ahlquist, a well-known explorer among the tribes of North-western Siberia, will start, next spring, for further ethnological explorations among the Voguls and Ostyacks of the Obi and Irtysh. He will be accompanied by two assistants, the Senate of Finland having allowed a sum for the travelling expenses of the explorers.

AT a recent meeting of the Manchester Literary and Philosophical Society a letter was read from Mr. Joseph Sidebotham in which he calls attention to the fact of the growing use of the aniline colours for tinting photographs. He finds they are being *extensively* used in paintings and water-colour drawings, and the colours regularly sold for that purpose. Anyone who knows the speedy alteration by light of nearly all of these colours will protest against their use, and a statement of this with the authority of some of our chemists would probably have the effect of causing them to be discontinued by all artists who care to think that their works should last more than a single year.

ON the night of the Arlesey railway accident there were six Indian elephants on their way by train from Huddersfield to London. Two were large and the others quite young. The tarpaulin over the trucks in which they travelled was blown away in the gale, and the animals were thus exposed to the snow and sleet and cold wind of that night. They were also delayed long on the road in consequence of the accident. One of our contributors who saw them "unloaded" at King's Cross, and noticed that they walked very stiffly at first, has inquired of Mr. Harrington, their keeper, whether the cold journey has affected them. He has written in reply that they seem perfectly well, and he cannot see that the unusual exposure has had any effect on them. None of the animals have been more than a few years in England. As Mr. Harrington's letter is written nine days after the journey, no effects of chill are likely now to show themselves. The Indian (and perhaps the African) elephant may be better able to withstand sudden climatical changes than is generally supposed.

OUR Samoan Correspondent, the Rev. S. J. Whitmee, announces the publication of a new Dictionary of the Samoan language by himself and the Rev. G. Pratt. Mr. Whitmee is on his way to England, where he will probably arrive in spring. Intending subscribers—and we hope there will be a considerable number in this country—should address Mr. Whitmee at the Mission House, Blomfield Street, Finsbury, E.C. The price, it is hoped, will not exceed 10*s*.

WE have received reprints of the letters which M. Poliakoff has written during his recent journey for the zoological exploration of the Obi and Irtysh. They contain many valuable observations on the physical characters of the country visited, on its fauna, on the migrations of fishes up and down the Obi, and on the fisheries, on the migrations of birds, together with a variety of interesting occasional observations. We may hope therefore that the report on this journey will be a valuable addition to the zoo-geography of Western Siberia.

M. POLIAKOFF gives the following particulars confirming the law of Baer as to the deviation to the right of rivers running north and south. The bed of the Irtysh being cut in loose deposits, these deposits are constantly undermined by water on the right bank. Each spring a strip of the bank from 30 to 50 feet broad is destroyed by the waters. Sometimes it happens that a strip from 70 to 140 feet broad and about 150 yards long falls suddenly into the river. The course is then barred for a short time, and a great wave propagated up and down the stream, destroys the fishing-boats which happen to be at work within a distance of about ten miles from the spot. Large quantities of fishes are also found, after such a catastrophe, on the shores, suffocated in the muddy waters. The destruction of the right bank going on constantly, year after year, the villages are also constantly advancing to the east; one of them, Demiansk, has thus travelled about a mile in the course of 240 years. The left shore shows, therefore, a low tract of land covered with ponds and marshes, and yearly overflown, whilst the right shore faces the water with abrupt crags from 70 to 150 feet high. The same thing is also observed on the Obi. The hills of Bélogorie, a short way below the mouth of the Irtysh, have now the main bed of the river to their right, while some time ago it was on their left, there being now on the latter side only a secondary arm. These arms of the Obi—remains of its former beds—form on the left flat shore a series of elongated ponds and channels, connected with the main body of the river by a labyrinth of smaller water-courses.

IN the article in last week's number on Dr. Schliemann's Discoveries, *Amyclæ* was misspelt *Amychi*, Sir R. Colt Hoare's name was given as *Home; Arena* should be *Arma* Heroum, *Miomedia* should be *Nicomedia*, and *Caprea*, *Capreæ*.

THE first number of a new quarterly scientific journal, devoted to zoology, botany, geology, and mineralogy, will be published at Buda-Pest this month. It will be in German, though its first title is "Természetrajzi Füzelek" ("Naturhistorische Hefte"). Prof. Otto Herman is the principal editor.

THE death is announced of the Rev. Barnard Smith, the author of many well-known educational works in arithmetic and algebra.

A WELL-DESERVED pension of 50*l.* a-year has been bestowed upon Mr. Thomas Edwards, the "Scottish Naturalist," whose life Mr. Smiles has written.

DR. PETERMANN has been informed that the Portuguese Government has granted a subsidy of 20,000*l.* in aid of the proposed great scientific expedition for the exploration of Central Africa. The expedition is already organised and will start without delay, commencing its operations by proceeding up the Congo.

THE *New York Herald* of December 2 and 11, contains letters on our Arctic Expedition, by Dr. Hayes.

IN the last report of the Berlin *Akademie der Wissenschaften*, J. Bernstein describes an exceedingly simple and ingenious apparatus for determining the position of the nodal point of the eye of a living person. Experiments with his right eye gave 7·21–7·38 mm. as the distance of the rear nodal point from the vertex of the cornea.

THE Royal Museum at Berlin has received a valuable donation of about 8,000 ethnographical objects from Dr. Jagor. They are the results of extensive journeys through East Turkestan, Burmah, and portions of India, and afford a most complete picture of the domestic and military life of the widely diversified tribes inhabiting the less known parts of these countries.

THE gorilla in the Berlin Aquarium which excited so much interest among German naturalists, has lately recovered from a serious illness, and is now more than ever demonstrative and humanlike in his movements. With the approach of winter a soft silky fur has made its appearance. The weight of this young gorilla has increased from thirty-three to forty-three pounds during his six months' residence in Europe, a fact which would seem to show that confinement is, after all, not so unendurable for him as was supposed.

A SERIES of new rooms has been opened at the *Musée d'Artillerie* of Paris, in which a set of guns is arranged showing the various models used since the artillery was introduced for the first time in warfare 600 years ago.

THE *Annuaire du Bureau des Longitudes* is publishing for the first time two interesting tables;—first, the situation of the several radiant points of falling stars, second, the catalogue of all variable stars, with a calendar of their variations during the year 1877.

MR. M'LACHLAN gives a few details in the *Entomologist's Monthly Magazine* concerning Capt. Feilden's collection of the insects of the Arctic expedition, which he has seen. The greater number of the insects were collected near Discovery Bay in 81° 42′ N. latitude; some of the *Lepidoptera* are even from 82° 45′. The most interesting fact is the occurrence of five or six species of butterflies within a few hundred miles of the North Pole, especially when taken into consideration with the fact that Iceland and the large islands of the Spitzbergen group, although in lower latitudes, have apparently no butterflies. In *Lepidoptera* Mr. M'Lachlan observed four examples (2 ♂, 2 ♀) of the genus *Colias*, possibly two species (? *Boothii* and *Hecla*). Apparently three species of *Argynnis* or *Melitæa* (or both). A *Chrysophanus* apparently identical with *phlæas*. In the *Noctuidæ*, only one individual—an *Acronycta*. In the *Geometridæ*, one *Amphidasis* or *Biston*, and several Cheimatobioid forms with apterous females. Of the *Crambites*, one *Phycis*, perhaps our *fusca*. The *Hymenoptera* are represented by a *Bombus*, and one of the *Ichneumonidæ* of considerable size. In the *Diptera* there is one large fly, probably belonging to the *Tachinidæ*, and perhaps parasitic on the larvæ of some of the *Lepidoptera*. One species of *Tipulidæ*; and a considerable number of *Culicidæ*, and of what looks like a *Simulium*, which, however, do not appear to have annoyed the members of the expedition in these high latitudes. Of *Coleoptera*, *Hemiptera*, and *Neuroptera*, Mr. M'Lachlan saw none; but the bird-lice are naturally well represented.

THE second International Congress of Americanists, organised for the Study of American Antiquities, will be held at Luxembourg on September 10–13, when all English students and *savans* will be cordially welcomed. Information and tickets may be obtained from Mr. Francis A. Allen, 15, Fitzwilliam Road, Clapham, S.W., one of the delegates for England.

THE December session of the *Deutsche Geologische Gesellschaft* was devoted to a long address from Herr Lohsen upon the Rammelsberg, in the neighbourhood of Goslar. The peculiar deposits of ore in this mountain he regarded as belonging to a much later epoch than that in which the surrounding slate was formed, while he explained the lens-shaped form of the cavities in which the deposits are formed as due to the enormous pressure of the overlying strata of sandstone.

THE recent death of Mr. James Drummond, of Comrie, deprives us of a local geologist. He had devoted much time and attention to the Comrie earthquakes, on which he had published many articles and a little book. His views were generally in disaccord with those of the observers appointed by the British Association, against whom he held out manfully.

THE large number of fossil plants brought home from Greenland and Spitzbergen by the two Swedish expeditions of 1870 and 1872 have been carefully examined by Dr. Oswald Heer, and they appear to throw important light on the geological development of the plant world. An account of his study of the remains from the chalk period appears in a recent number of the *Naturforscher*, and in the summary of his results Dr. Heer points out that the facts are against a gradual imperceptible transformation of plant types; from the upper chalk the dicotyledons appear suddenly in great variety, without any transition, whereas other forms at this period wholly disappear from the scene. Further, these researches make it very probable that a whole series of genera have had their origin in the Arctic zone, and have thence "radiated" southwards. Lastly, Dr. Heer shows that the facts at present known of plant palæontology do not point to any alternation of climate or repeated ice-periods in these regions (a view which has also been developed by Prof. Nordenskjöld).

DR. LAUDER LINDSAY has sent us a well drawn up programme of a subject for essays, to be substituted for the ordinary subjects set in schools. The subject is the Moral Education of the Lower Animals, and is intended to train the observing powers of the young, as well also to discover how far animals are capable of moral training.

AT a recent meeting of the Belgian Academy, M. Dupont announced the discovery of numerous vestiges of the age of polished stone in the neighbourhoods of Hastière-sur-Meuse. No less than fifteen burial caverns were discovered in the locality. Five of them have already yielded about fifty-five human skeletons and thirty-five sufficiently well-preserved skulls. Sixteen dwelling-places of the people who inhabited at that period the plateaux, are already explored, and have produced numerous flint weapons. These discoveries promise to throw much light on the pre-historic ethnography of the country.

THE Pennsylvanian Company, which was formed some time ago in order to convey the petroleum obtained in Pennsylvania from the wells to the seaports on the Atlantic, now intends to construct a tube of 4 in. diameter and of some 300 miles in length, connecting the wells with the sea. The practical possibility of the plan is proved by works, which, for a distance of 250 miles, are already in action and use. Baltimore was the first city with which these new canals were connected. The oil is forced through the pipes at a pressure of 900 lbs. on the square inch, and at intervals of fifteen miles large steam pumps, of 10-horse power, assist the motion of the stream. At Baltimore the canal ends in enormous tanks, and these are in direct communication with the refining works. The cost of the new canal and accessories is calculated at 1,250,000 dollars.

IN a note in the *Bulletin* of the Belgian Academy (vol. xlii., Nos. 9 and 10) Dr. Putzeys gives the results of his experiments on new anæsthetics belonging to the alcoholic series, viz., the bromides of ethyl, propyl, and amyl. Inhaled by frogs, rabbits, cats, and dogs, they were proved to possess the same properties as chloroform. The interest of the result is increased by the circumstance that many compounds of bromine from the fat series do not possess the same anæsthetic properties as the corresponding compounds of chlorine.

THE July number of the *Isvestia* of the Russian Geographical Society gives an interesting report by Col. Bolsheff on that part of the Pacific shores of Russian Mantchuria which lies between the 45° and 52° north lat., a country the interior of which remained very little known until now. Almost the whole of the land is covered with mountains, outliers of the Sikhotaalin, a ridge reaching in its highest point 5,173 feet, and abruptly falling to the sea with hills about 800 feet high. The high valleys, which sometimes have a breadth of seven miles, seem to be well suited for agricultural settlements. In the northern parts of the country, lead, silver, iron, copper, and gold, were discovered, this last seeming to occur in considerable abundance. The population is very thin, numbering but 550 souls, Chinese and Tazes, who carry on agriculture, and Gilyaks and Tunguses, living miserably by hunting and fishing. The settled Chinese and Tazes are also engaged in the collection of sea-weeds and sea-worms purchased in China, the Tazes being almost reduced to slavery by the Chinese. Various collections, especially botanical and entomological ones, were brought in by M. Bolsheff, and will be deposited at the Russian Geographical Society.

M. LIPPICH, of the Vienna Academy, has recently been investigating the influence of the mean distance of absorbent particles upon absorption. As such an influence must be especially prominent when the substances afford well-defined absorption bands, and, with considerable density, show no strong colours, he chose for his experiments the nitrate of didymium oxide, which has these properties in high degree. A pretty concentrated aqueous solution of this salt in a vessel 1 cm. thick was spectroscopically compared with a solution having concentration only 0·1, 0·05 . . . of the first. The solutions were in tubes of 10, 20 cm. . . . length severally. A Steinheil spectroscope was used, and the light sources were two gas lamps so regulated that both spectra showed the same brightness on the parts that were free from absorption. Even with the concentration-ratio 1 : 10, there were marked differences in the absorption bands. The very characteristic bands in yellow and yellow-green were, for the more concentrated solution, considerably broadened towards the red end of the spectrum, while the sharp limit towards the violet was the same for both solutions. The much narrower bands in the green showed quite a similar behaviour. In the other parts differences were observed with difficulty. Besides this difference in the breadth of the absorption bands, there were others in the distribution of the bright parts.

PROF. BERNARDIN, the indefatigable *conservateur* of the Commercial and Industrial Museum at Melle, near Ghent, has just published another of his useful lists under the title of *Classification de* 250 of *Fécules.* The arrangement is on a scientific system, the plants being classed under their natural orders, commencing with the Cryptogams and proceeding with the higher developed plants. The scientific name of the plant is placed first under each order and is in italics so as easily to catch the eye. The lists previously compiled by Prof. Bernardin are *Classification des Huiles Végétales*, *Nomenclature de* 550 *Fibres Textiles*, *Classification de* 250 *Matières Tannantes*, *Classification de* 100 *Caoutchoucs et Guttaperchas*, and *Classification de* 40 *Savons Végétaux*. These lists, when brought together, will prove serviceable to all those interested in the application of plants.

THE phenomenon of fluorescence, according to M. Lallemand (*Journal de Physique*) is much more general than has been commonly supposed; he knows of only two substances in which it is *nil*, viz., rock-salt and quartz. If it has not been remarked in the majority of liquids, and even of transparent solids which possess it, this is because all the spectral rays are capable of producing it, and the fluorescence, instead of being produced with a maximum of brightness and a proper colour at the surface of incidence, is manifested throughout the mass of the body traversed by the light and without a very pronounced proper colour. M. Lallemand distinguishes two kinds of fluorescence—one called *isochromatic*, or of equal colour, in which each simple ray excites an identical vibratory movement; this kind is produced by all the luminous rays of the spectrum in sulphide of carbon, benzine, alcohol, ether, &c., and in water itself in a slight degree; the other is that long observed in sulphate of quinine, and which is therefore called *quinic* or *hypochromatic* fluorescence. Each luminous ray here produces a fluorescence of less refrangibility, with this peculiarity, that a simple light produces often a complex fluorescence, containing rays of various refrangibilities, but always inferior to that of the exciting ray. It is generally the most refrangible and the chemical rays which develop quinic fluorescence of various intensities. A body may possess both kind of fluorescence at once, but the two parts of the spectra corresponding to them may be very unequal. In glass and crystal, *e.g.*, the red, yellow, and green rays develope a weak isochromatic fluorescence, the others produce quinic fluorescence.

M. GIFFARD, the celebrated aeronaut, and inventor of the *injecteur*, is constructing, at Forges-de-la-Seine, a small steamboat for service from Pont Royal to the Exhibition (1878) Pier, distance only three miles. The steamer will realise the extraordinary velocity of forty-five miles per hour, and run the distance in four or five minutes. The length of the steamer willbe thirty metres, and transverse section three and a half metres.

THE additions to the Zoological Society's Gardens during the past week include six Greek Partridges (*Caccabis saxatilis*) from Persia, Naran River, two Black-headed Partridges (*Caccabis melanocephala*), a Hey's Partridge (*Caccabis heyi*) from Hedyar, near Mecca, presented by Mr. F. M. Burke, Commander S.S. *Arcot*; a Yellow-lored Amazon (*Chrysotis xantholora*) from Central America, purchased.

SCIENTIFIC SERIALS

Poggendorff's Annalen der Physik und Chemie, Ergänzung Band viii., Stück 1.—On the electric conductivity of water and some other bad conductors, by M. Kohlrausch.—The mica-combination of Reusch, and the optical rotatory power of crystals, by M. Sohncke.—On determination of the constants for absorption of light in metallic silver, by M. Wernicke.—The interference of refracted light, by M. Lommel.—The fundamental principles of Edlund's electrodynamics, by M. Chwolson.—Volumetric chemical studies, by M. Ostwald.—On the influence of the funnel-valve on electric spark discharges in air, by M. Holtz.—On an electrical fly-wheel like that of the radiometer, by M. Holtz.—Steam-jet air-pump, by M. Teclu.

Journal de Physique, December.—Measurement of the calorific intensity of the solar radiations and of their absortion by the terrestrial atmosphere, by M. Crova.—On various theories given to explain the movements of Crookes's radiometer (second paper), by M. Lippmann.—On the illumination of transparent and opaque bodies (concluded), by M. Lallemand.

THE *Jahrbuch der k.k. geologischen Reichsanstalt zu Wien* (vol. xxvi. part 2), to which are added Dr. Gust. Tschermak's *Mineralogische Mittheilungen* (vol. vi., part 2), contain the following papers:—Geological survey of the Dutch East Indian Archipelago, by Dr. Schneider.—The saline springs of Galicia, by Mich. Kelb.—Report on the volcanic events during the year 1875, by Dr. C. W. C. Fuchs. Of this we publish a detailed account in our "Notes."—On the green slates of Lower Silesia, by Ernst Kalkowsky.—On beryl from Eisvold, in Norway, by M. Websky.—Chemical analysis of the iodiferous saline springs of Darkau, by E. Ludwig.—On the volcanic formations of the Galapagos Islands, by F. A. Gooch.—On a perfect combination of pyrites and hæmatite crystals, by Dr. C. Hintze.—On some minerals from North-western Silesia, by F. Nenimar.

SOCIETIES AND ACADEMIES

LONDON

Chemical Society, December 18, 1876.—Prof. Abel, F.R.S., president, in the chair.—Prof. W. N. Hartley made a communication entitled "a further study of fluid cavities," in which he described the results of his examination of a large number of topaz and of rock sections, mostly granites and porphyries. The fluid contained in the cavities was almost invariably water, but it was very remarkable that the cavities often took the form of the crystals in which they were contained, and nearly always arranged themselves symmetrically with regard to the faces of the crystal.—A paper by Dr. H. E. Armstrong, F.R.S., on thymoquinone, one on high melting points with special reference to those of metallic salts, part 2, and another on the determination of urea, by Mr. G. Turner, followed this, after which Dr. G. Bischof called attention to the rapid corrosion of the so-called "compo" pipe employed by gas-fitters when used to convey water, especially when exposed alternately to the action of air and water.

Meteorological Society, December 20, 1876.—Mr. H. S. Eaton, M.A., president, in the chair.—Rev. C. C. Chevallier, T. Gordon, and Rev. T. H. Quelch were elected Fellows of the Society.—The following papers were read:—On observations with the psychrometer, by Dr. R. Rubenson (translated from the Swedish, and abridged by Dr. W. Doberck). This paper contains an account of the instructions issued to the Swedish observers in order to obtain trustworthy results from the psychrometer, or dry and wet bulb hygrometer. These instructions, however, do not differ from those followed by English observers at the present time.—Contributions to hygrometry: The wet bulb thermometer, by William Marriott, F.M.S. This paper contains the results of observations made with several wet bulbs in different positions and under different conditions, which were carried on in order to determine what a *wet bulb thermometer should be*. Ten thermometers were used as wet bulbs and three as dry bulbs. With three wet bulbs the water receptacles were placed at different angles; but it was found that the readings were not affected by the position of the water receptacle. Others were used with different thicknesses of muslin and conducting threads; but it was shown that the thermometers with the thinnest muslins always gave the lowest readings. Three pairs of dry and wet bulbs were used, one with a closed water reservoir six inches from the dry bulb, the other two having open reservoirs which were respectively three inches and one inch from the dry bulbs. It was found that the dry bulbs of the two latter read lower than the former in fine dry weather, but when the air was damp and during rain they generally read higher. The wet bulbs of the latter read a little higher than the former; this was mostly the case in damp weather. In conclusion, the author submitted for adoption certain regulations for the management of the dry and wet bulb thermometers, in order to secure comparable results.—Visibility, by the Hon. Ralph Abercromby, F.M.S. Visibility, or unusual clearness and nearness of distant objects, is a very trustworthy prognostic of rain in this and many other countries. The usual explanation that much moisture increases the transparency of the atmosphere is not borne out by observation. In this country great nearness occurs on a clear, brisk day, when hard masses of cloud shade the glare of the sky from crossing direct light sent from distant objects, and make clearness so great as to give the impression of nearness. The kind of rain which immediately follows nearness is in short sharp showers, but unsettled weather often follows later. The synoptic conditions of nearness in this country are either straight isobars or the edge of anticyclones, neither of which are associated with settled weather.—Description of a meteorographic model, a letter from the late Commodore M. F. Maury, Hon. Mem. M.S., to Capt. H. Toynbee, F.R.A.S.

Physical Society, December 16, 1876.—Prof. G. C. Foster, president, in the chair.—The following candidate was elected a member of the Society:—Mr. W. Baily, M.A.—Mr. Crookes described some of the most recent results he has obtained in his experiments on the radiometer, and exhibited many beautiful forms of the apparatus, most of which have been devised with a view to decide on the correct theory of the instrument. We shall refer to the subject of the paper in an early number.—Prof. Dewar exhibited a simple electrometer which he has designed, founded on the discovery of Leipman that the capillary constant is not really independent of the temperature or condition of the surface, but is a function of the electromotive force. If a capillary tube be immersed in mercury, and dilute sulphuric acid be placed in the tube above the mercury, and a current from a Daniell's cell be so passed through the liquids that the mercury forms the negative pole, the column will be depressed to an extent dependent on the diameter of the tube. In making an electrometer, Prof. Dewar has increased the sensitiveness by connecting two vessels of mercury by means of a horizontal glass tube filled with the metal, except that it contains a bubble of dilute acid. The tube must have an internal diameter of two millimetres, and it is essential that it be perfectly clean, uniform in diameter, and horizontal. The instruments exhibited were constructed by Messrs. Tisley and Spiller, and Prof. Dewar showed that it is possible by means of them to measure an electromotive force equal to $\frac{1}{1000}$th of a Daniell's cell; forces capable of decomposing water must be measured by causing two currents to act against each other. The index bubble is brought to zero by uniting the mercury cups by a wire. The apparatus is very convenient, as it requires no preparation and is extremely simple in its action. He then showed an instrument arranged by Mr. Tisley for producing a current by the dropping of mercury from a small orifice into dilute sulphuric acid; if the vessels containing the mercury and the acid be connected by a wire a current is found to traverse it. He then exhibited a manometer suitable for measuring very slight variations of pressure, and he illustrated the use of it for proving Laplace's law that the internal pressure multiplied by the diameter of a soap-bubble is constant. It consists of a U-tube, one arm of which is about 15 inches long, and is bent horizontally and levelled with great care. If the shorter arm be connected with a tube on which a bubble has been blown and the diameter of the bubble be varied, the position of the extremity of the alcohol column will be found to vary in accordance with the above law.

Entomological Society, December 6, 1876.—Sir Sidney Smith Saunders, C.M.G., vice-president, in the chair.—Prof. Eduard Grube, Director of the Zoological Museum of the University of Breslau, and Dr. Katter of Putbus, in the Island of